



## ADVERSE CHILDHOOD EXPERIENCES (ACE) STUDY

### About the Study

The ACE Study was initiated at Kaiser Permanente from 1995 to 1997, and its participants are over 17,000 members who were undergoing a standardized physical examination. No further participants will be enrolled, but we are tracking the medical status of the baseline participants.

Each study participant completed a confidential survey that contained questions about childhood maltreatment and family dysfunction, as well as items detailing their current health status and behaviors. This information was combined with the results of their physical examination to form the baseline data for the study.

The prospective phase of the ACE Study is currently underway, and will assess the relationship between adverse childhood experiences, health care use, and causes of death.

More detailed scientific information about the study design can be found in "[The relationship of adult health status to childhood abuse and household dysfunction](#),"\* published in the *American Journal of Preventive Medicine* in 1998, Volume 14, pages 245-258.

### Major Findings

Childhood abuse, neglect, and exposure to other traumatic stressors which we term [adverse childhood experiences](#) (ACE) are common. Almost two-thirds of our study participants reported at least one ACE, and more than one in five reported three or more ACE. The short- and long-term outcomes of these childhood exposures include a multitude of health and social problems. The ACE Study uses the ACE Score, which is a count of the total number of ACE respondents reported. The ACE Score is used to assess the total amount of stress during childhood and has demonstrated that as the number of ACE increase, the risk for the following health problems increases in a strong and graded fashion:

- obesity
- chronic obstructive pulmonary disease (COPD)
- depression
- fetal death
- health-related quality of life
- illicit drug use
- ischemic heart disease (IHD)
- liver disease
- risk for intimate partner violence
- multiple sexual partners
- sexually transmitted diseases (STDs)
- smoking
- suicide attempts
- unintended pregnancies
- alcoholism and alcohol abuse



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In addition, the ACE Study has also demonstrated that the ACE Score has a strong and graded relationship to health-related behaviors and outcomes during childhood and adolescence including early initiation of smoking, sexual activity, and illicit drug use, adolescent pregnancies, and suicide attempts. Finally, as the number of ACE increases the number of co-occurring or “co-morbid” conditions increases.

### Pyramid



The ACE Pyramid represents the conceptual framework for the Study. During the time period of the 1980s and early 1990s information about risk factors for disease had been widely researched and merged into public education and prevention programs. However, it was also clear that risk factors, such as smoking, alcohol abuse, and sexual behaviors for many common diseases were not randomly distributed in the population. In fact, it was known that risk factors for many chronic diseases tended to cluster, that is, persons who had one risk factor tended to have one or more others.

Because of this knowledge, the ACE Study was designed to assess what we considered to be “scientific gaps” about the origins of risk factors. These gaps are depicted as the two arrows linking Adverse Childhood Experiences to risk factors that lead to the health and social consequences higher up the pyramid. Specifically, the study was designed to provide data that would help answer the question: “If risk factors for disease, disability, and early mortality are not randomly distributed, what influences precede the adoption or development of them?” By providing information to answer this question, we hoped to provide scientific information that would be useful for the development of new and more effective prevention programs.

The ACE Study takes a whole life perspective, as indicated on the orange arrow leading from conception to death. By working within this framework, the ACE Study began to progressively uncover how childhood stressors (ACE) are strongly related to development and prevalence of risk factors for disease and health and social well-being throughout the lifespan.



## Prevalence of Individual Adverse Childhood Experiences

Collected between 1995 and 1997, the prevalence's (%) presented below are estimated from the entire ACE Study sample (n=17,337). Individual research papers that use only Wave 1 data or Wave 2 data will contain slightly but not significantly different prevalence estimates for individual ACE.

ACE Category*		Women (N = 9,367)	Men (N = 7,970)	Total (N = 17,337)
<a href="#">Abuse</a>				
	<a href="#">Emotional Abuse</a>	13.1	7.6	10.6
	<a href="#">Physical Abuse</a>	27.0	29.9	28.3
	<a href="#">Sexual Abuse</a>	24.7	16.0	20.7
<a href="#">Neglect</a>				
	<a href="#">Emotional Neglect<sup>1</sup></a>	16.7	12.4	14.8
	<a href="#">Physical Neglect<sup>1</sup></a>	9.2	10.7	9.9
<a href="#">Household Dysfunction</a>				
	<a href="#">Mother Treated Violently</a>	13.7	11.5	12.7
	<a href="#">Household Substance Abuse</a>	29.5	23.8	26.9
	<a href="#">Household Mental Illness</a>	23.3	14.8	19.4
	<a href="#">Parental Separation or Divorce</a>	24.5	21.8	23.3
	<a href="#">Incarcerated Household Member</a>	5.2	4.1	4.7

<sup>1</sup>Collected during the second survey wave only (N=8,667).

Number of Adverse Childhood Experiences (ACE Score)	Women	Men	Total
0	34.5	38.0	36.1
1	24.5	27.9	26.0
2	15.5	16.4	15.9
3	10.3	8.6	9.5
4 or more	15.2	9.2	12.5

\* Some ACE categories were defined using items adapted from other questionnaires. These were the Conflict Tactics Scale<sup>a</sup> (physical abuse, witnessing interparental violence, and emotional abuse), the Child Trauma Questionnaire<sup>b</sup> (emotional and physical neglect) and questions from Wyatt<sup>c</sup> (sexual abuse).

<sup>a</sup> Straus MA., & Gelles RJ. *Physical Violence in American Families: Risk Factors and Adaptations to Violence in 8,145 Families*. New Brunswick, NJ: Transaction Press; 1990.

<sup>b</sup> Bernstein DP, Fink L, Handelsman L, Foote J, Lovejoy M, Wenzel K, Sapareto E, & Ruggiero J. Initial Reliability and Validity of a New Retrospective Measure of Child Abuse and Neglect. *American Journal of Psychiatry* 1994;151:1132–1136.

<sup>c</sup> Wyatt, GE. The Sexual Abuse of Afro-American and White-American Women in Childhood. *Child Abuse & Neglect* 1985;9:507–519.